

EDUCATION at the SUMMIT

I.F. LENDING

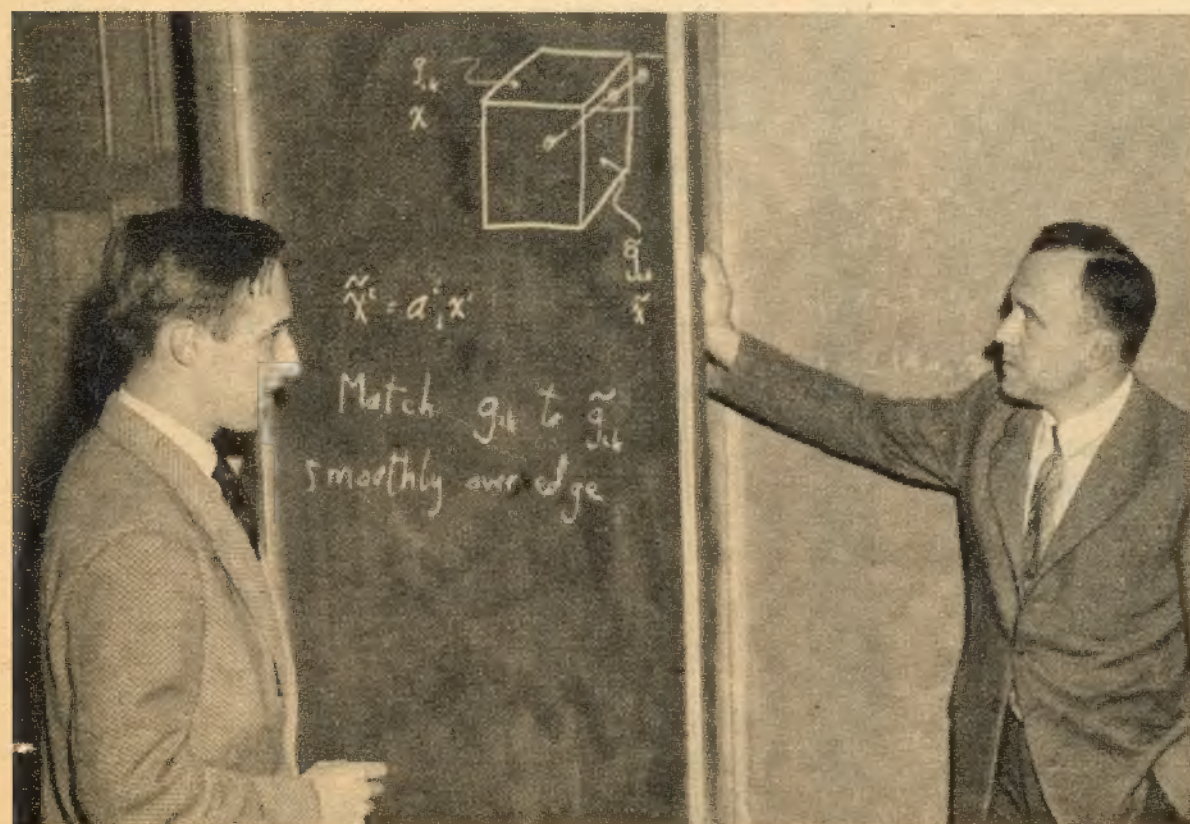
NEWARK LIBRARY
MAY 57

Despite Several Areas of Brilliance in Field of Advanced Study, New Jersey's Lack of Specialized Training Facilities Forces Three Out of Four Graduates to Pursue Research Programs Out of State

By JOHN T. CUNNINGHAM



Princeton's world-famous Institute for Advanced Study where only those graduates holding highest degrees are admitted to membership. BELOW: Prof. John A. Wheeler (right) and student of mathematical physics discussing problem involving galaxies in a closed universe.



HIGHER education is much of the time like money: The more a person gets, the more he must have. Fifty years ago—yea, 25 years ago—four years of college set a man apart; today, with 30 per cent of all the nation's young men and women going to college, a bachelor's degree often is regarded merely as a good starting point.

Many educators cling tenaciously to the notion that a bachelor's degree is only as good as the graduate schools willing to recognize it as a passport to the land of advanced study. But graduate work as a yardstick of intellectual fitness or vocational readiness is transcending the ivory tower. Rapidly widening knowledge is forcing that issue.

Engineers and scientists vitally need advanced work to keep abreast of the myriad changes in their professions. Psychologists and sociologists and teachers and scores of other professionals require continued training beyond the bachelor level. Doctors and dentists obviously can be prepared only in graduate schools. Nowhere is the impact of graduate study more crucial than in college faculties; graduate study is almost as much of a necessity for a college professor as his five senses—salary-wise as well as intellect-wise.

Granted, then, that graduate study has become a matter of increasing importance, how do New Jersey's advanced degree programs compare with others in the United States? The answer invites concern: statistics show that three out of four Jerseyans who desire graduate study leave the state to get it.

NOT that there is a lack of demand for graduate study. A 1950 survey by the Office of Education in the Federal Security Agency showed 8,553 New Jersey students pursuing graduate studies, placing New Jersey eighth nationally—exactly where it should be, since New Jersey also is eighth in population rank. Of those 8,553 students, however, only 2,061 were in graduate schools within the state. That's a mere 24 per cent, just good

enough to tie New Jersey for last place nationally with Vermont in percentage of students getting graduate education within their own state borders.

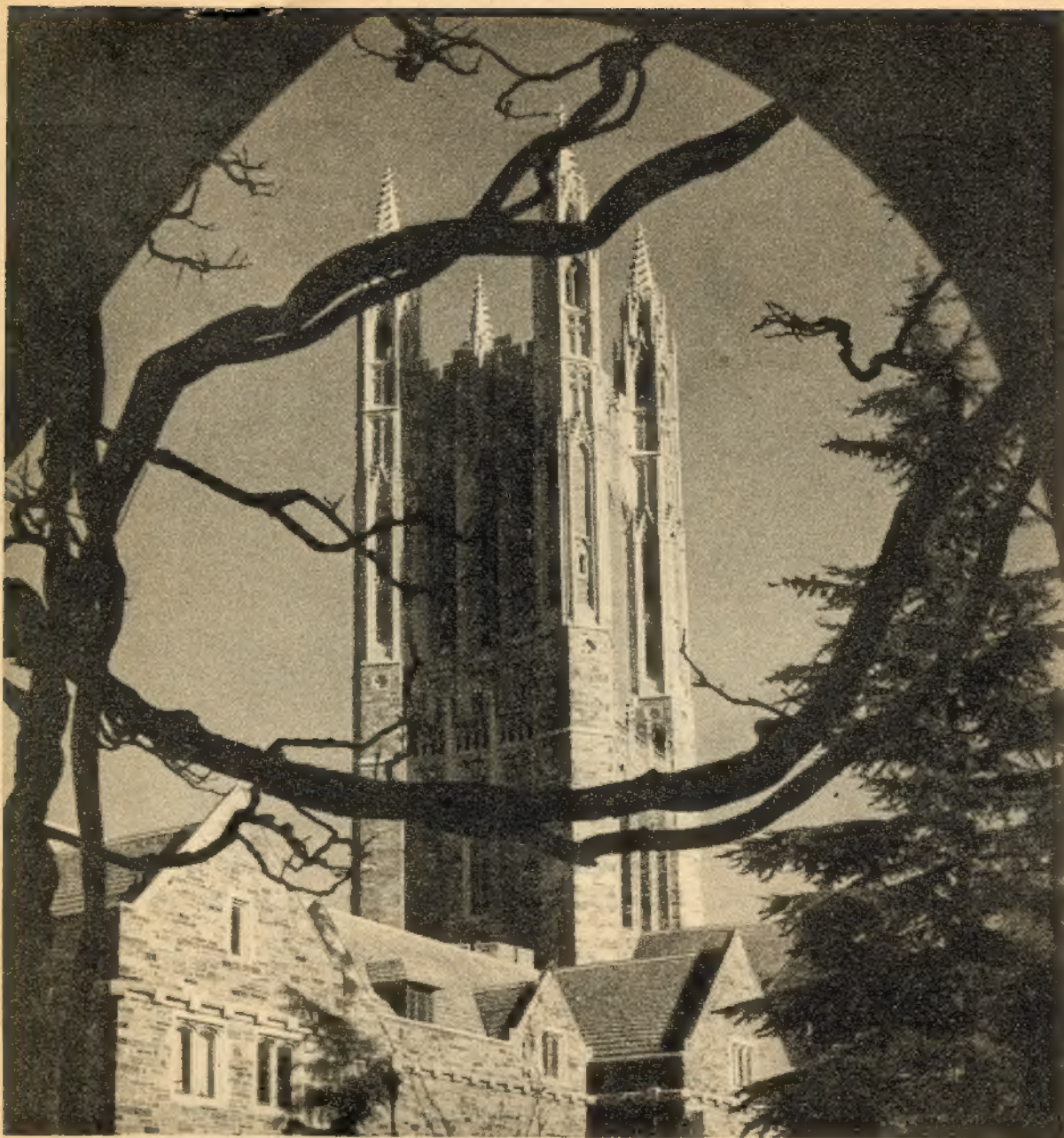
This seeking out-of-state programs is not entirely a matter of compulsion, obviously. There are excellent reasons for leaving New Jersey, over and above the lack of graduate opportunity within the state. Degrees from such nearby graduate schools as Columbia, Fordham, NYU and Pennsylvania carry national prestige. Public transportation often carries students more readily to New York or Philadelphia halls than to New Jersey campuses. The specialized nature of graduate study often makes it mandatory for a student to seek a specific out-of-state school.

The fact remains, nevertheless, that New Jersey has graduate school weaknesses which can't be attributed entirely to the New York or Philadelphia magnets. New Jersey's procrastination in the general field of higher education is unsurpassed nationally. This is most sharply etched by the monumental foot-dragging on medical and dental colleges in the state. Here, in the midst of a teeming population and prosperous industry, it is 1956 before Seton Hall opens the first medical college and Seton Hall and Fairleigh Dickinson start the first dental schools.

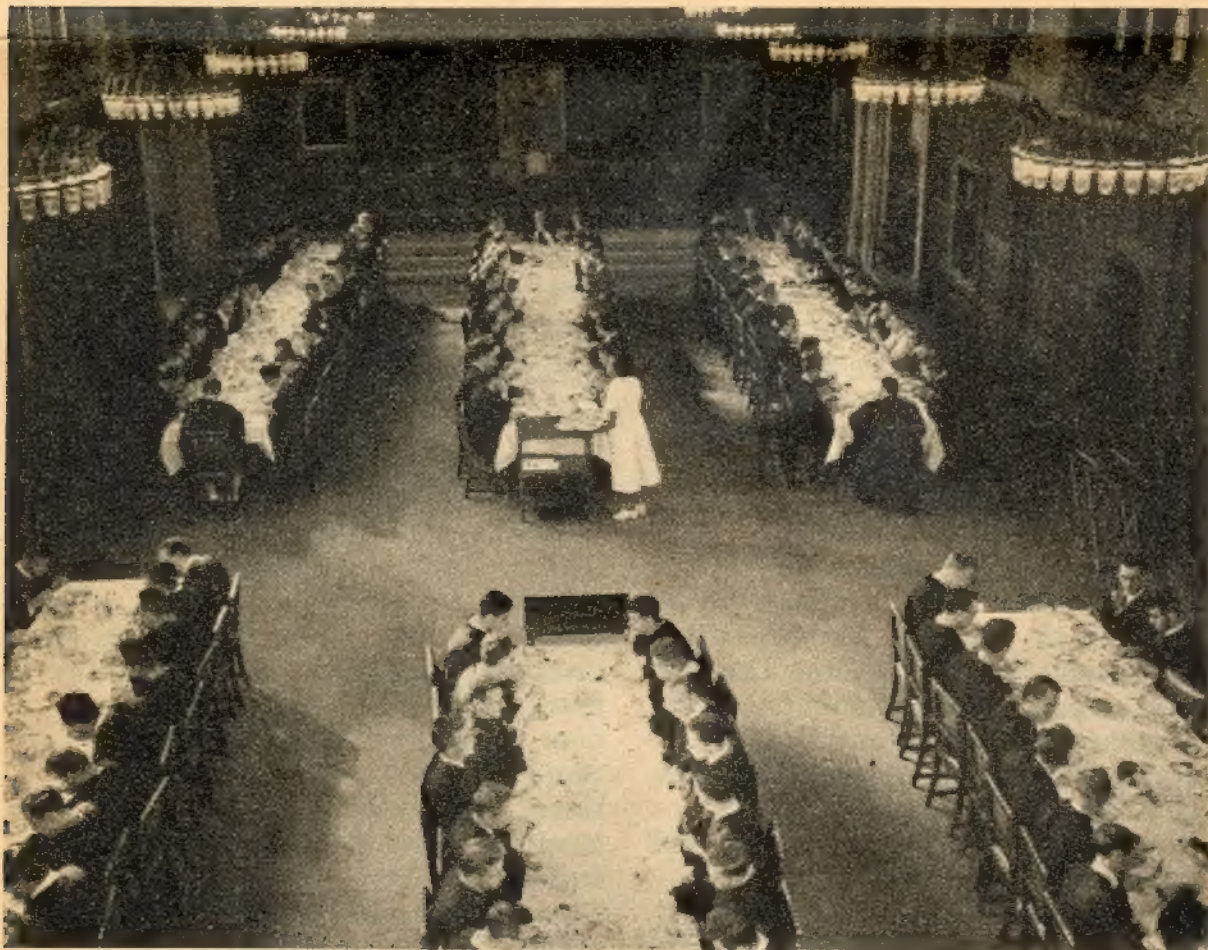
MAJOR reason for the state's lagging graduate study emphasis probably has been the absence until recent years of a strong state university, where educational leadership—particularly graduate school leadership—should be expected to start. Since Rutgers became the state university in 1945, its graduate program has moved steadily ahead, although it would be myopic to say that strides in the past decade promise soon to make Rutgers a great center for graduate study.

Encouragingly enough, nonetheless, in the midst of evident graduate school weaknesses, New Jersey has several areas of brilliance. It has, for instance, the very acme of graduate study—the Institute for Advanced Study at Princeton, where learning

This is the 26th in a series of articles which not only describe New Jersey's colleges and universities, but tell the story of the growth and traditions of individual colleges within the state, picture their roles in modern education and explain how they plan to meet what has been called "an impending tide of students."
The concluding article will appear next Sunday.



Cleveland Tower in Princeton Graduate School, symbol of resident graduate study in New Jersey and first college of kind in America. BELOW: An intellectual community, even dinner in school's Proctor Hall provides a time for interchange of knowledge and opinion.



goes far beyond the doctor of philosophy level (the recognized top plateau for all but a few minds). New Jersey can boast, too, of the Institute for Microbiology at Rutgers, unique as a specialized center of graduate study and research.

Princeton University's graduate school is world-famed as a center of the scholarly pursuit of the Ph.D. in the Old World traditions of study unmarred by mundane day-to-day concerns. Graduate engineering schools at Newark College of Engineering and

Stevens Institute of Technology, on the other hand, offer exceptional evening opportunity for engineers for whom the mundane concern of earning a living is very real.

THERE are other areas of strength, other reasons for optimism. New Jersey has several internationally known seminaries. The law schools at Rutgers and Seton Hall are widely respected. Seton Hall's forthcoming medical and dental studies and Fairleigh Dickinson's dental college will



Lights gleam in Stevens Institute of Technology where evening graduate engineering studies attract 800 men seeking advanced degrees. BELOW: Graduate program in computers at Stevens calls for demonstrations of digital differential analyzer built by staff members.



help meet great demands. Both Rutgers and Seton Hall are expanding graduate opportunities in several fields and Fairleigh Dickinson's diversified curricula are moving into graduate levels. Perhaps the growing awareness of the need for advanced study in New Jersey is the most encouraging aspect of all; now about 15 of the state's colleges and universities have graduate programs of one sort or another.

Graduate work in New Jersey divides sharply into two segments. On

the one hand there is the traditional sheltered academic atmosphere where a student pursues high learning more or less unfettered by economic pressures. Then there is the hurly-burly, grinding atmosphere of work toward a higher degree in evening and Saturday hours snatched away from family and friends. New Jersey has excellent examples of both.

Nowhere in the United States, quite probably nowhere in the world, is there a better instance of the clois-

(Continued on Following Page)

GRADUATE SCHOOLS



Alexander Hall, center of activity at Princeton Theological Seminary, which was founded in 1812 as a center of Protestant training.

(Continued From Preceding Page)

tered academic atmosphere than at the Institute for Advanced Study at Princeton. Here study is for the sheer joy of moving back the frontiers of knowledge. There are no formal curricula, no scheduled courses of instruction.

When Louis Bamberger and his sister, Mrs. Felix Fuld, endowed the Institute for Advanced Study in 1930 they visualized a graduate school in which students would seek higher degrees and in which the faculty would not be burdened by teaching undergraduates. From the first the institute developed differently. It awards no degrees and admits to membership only those who have already taken their highest degree.

Presently the academic work of the institute centers in two schools—a school of mathematics and a school of historical studies. About 100 of the world's greatest minds are free to study in the institute's buildings set on a square mile of quiet farmland and woodland. This is scholarship in its purest sense; this is a careful cultivation of America's most precious resource—its brains. Out of the institute came much of the fundamental knowledge for such wartime necessities as the atom bomb; out of the institute can come much of the basic knowledge for peace.

Few reach the Institute for Advanced Study. Fortunately, however, since it indicates a reservoir of brainpower, there are far more applicants for study than can possibly be accommodated. Many of those applications, logically enough, come from nearby Princeton University Graduate School, where study is respected and encouraged in a somewhat more usual pattern of graduate tradition.

PRICETON Graduate School is "usual" in that it grants degrees; at that point the ordinary ceases. No graduate student at Princeton is required to pass a set number of "courses" with a set "grade" as evidence of his mastery of an isolated

segment of knowledge. There is not even any effort to legislate the total span of graduate studies rigidly, but three years of full-time work for a doctorate is the norm except in the fields of history, experimental physics and engineering.

Although formal training takes place on the main undergraduate campus, Princeton Graduate School gains much of its significance in the Graduate College quadrangle, where living accommodations are provided for unmarried graduate students. Opened in 1913 as the first residence graduate college in America, it is dedicated to the principle that students develop in dimension when varied individuals live together in a single intellectual community.

IT might be foreign to the ideals of Princeton Graduate School to put a measurement on this sort of education, since there learning is an end in itself, not necessarily a means to fame or fortune. Still, consider that in a recent Fortune Magazine listing of the nation's 20 greatest young scientists, five out of 20 had been prepared in Princeton Graduate School. That is a concrete evidence of quality.

Optimum enrollment in the Princeton Graduate School is about 500, and for every annual vacancy there are at least five applicants. Entrance hinges almost entirely on intellect; scholarships, fellowships, assistantships and loans are so available that virtually no student with the intellectual capacity is barred because he lacks finances. He does need the brains—and he must have time.

Time. That's a key word in full-time residence graduate study—and outside of Princeton there is a modicum of it in New Jersey. As of February of this year Rutgers had only 379 full-time degree candidates (and 1,532 part-time graduate students). A private university might be satisfied with these accomplishments—but Rutgers is the State University of New Jersey.

In all fairness, Rutgers had only a

small graduate study program before World War II. Sixty years of graduate study by 1936 produced but 856 graduate degrees at Rutgers—only 105 of them Ph.D.s. The College of Agriculture had earned an enviable graduation reputation in its field by World War II; its success tended to cover the fact that in virtually all other areas graduate study trailed distressingly (from the standpoint of quantity, not quality).

Since 1945 Rutgers has implemented the nature and stature of its graduate study programs. In an average pre-war year Rutgers awarded about 50 degrees; last year it awarded 173 (mostly earned on a part-time basis). For that matter, nearly 60 per cent of all the Ph.D.s granted by Rutgers since 1912 have been awarded since 1947. Particularly noteworthy post-war graduate advances have been in the areas of microbiology, pharmacy, library service and social work. In most of these areas many students are on a full-time basis.

IN only one other area in New Jersey at the present time is there strong emphasis on full-time graduate study—in seminaries at Princeton Theological Seminary, Immaculate Conception Seminary (at Darlington), Drew Theological Seminary, Bloomfield Seminary and New Brunswick Seminary.

Of the five, Princeton, Drew and Immaculate Conception are sizable—with Princeton being one of the largest and best-known Protestant seminaries in the world. Princeton Theological Seminary has no organic relationship to Princeton University, but since its founding in 1812 the seminary has reaped benefits accruing from the intellectual stimulation of a university town.

While it is directly responsible to the Presbyterian Church, Princeton Seminary essentially has become a center of Protestant training; its student body of about 450 includes students from 50 denominations. Nearly every state, some 25 foreign countries and close to 200 colleges and universi-



Fairleigh Dickinson's "Castle" aglow as offices and classrooms are used for some of courses in evening graduate business program.

ties are represented on the 30-acre campus.

Drew Theological Seminary is next to Princeton in size, with about 250 students. Its background has been discussed in an earlier article on Drew University, but Drew has won worldwide attention as a Methodist theological center. Its student body is widely cosmopolitan and its graduates are leaders in world Methodism.

Immaculate Conception Seminary at Darlington, third largest in New Jersey, is the diocesan seminary of the Archdiocese of Newark and its purpose is to train priests for the diocesan Catholic clergy. Founded simultaneously with the start of Seton Hall in 1856, Immaculate Conception had its physical existence intertwined with The Hall until 1926. That year it moved from South Orange to a remarkably beautiful 1,100-acre campus at Darlington into the Ramapo valley. Today nearly 200 students live and study on those quiet Bergen County mountain slopes.

Time. Time. Time. That's the driving, pounding limitation of the 20th century, in education as well as in everything else. Even though liberal financing (scholarships, fellowships, assistantships and loans) make resident graduate study often easier to come by than undergraduate study, there still remains the necessity to spend as many as three or four years withdrawn from earning a living. These days undergraduates marry as readily as they once used to fill out a prom card. By the time he earns his bachelor's degree, many a college man is no longer a bachelor. He is, in fact, often a father. He must get on with supporting a family.

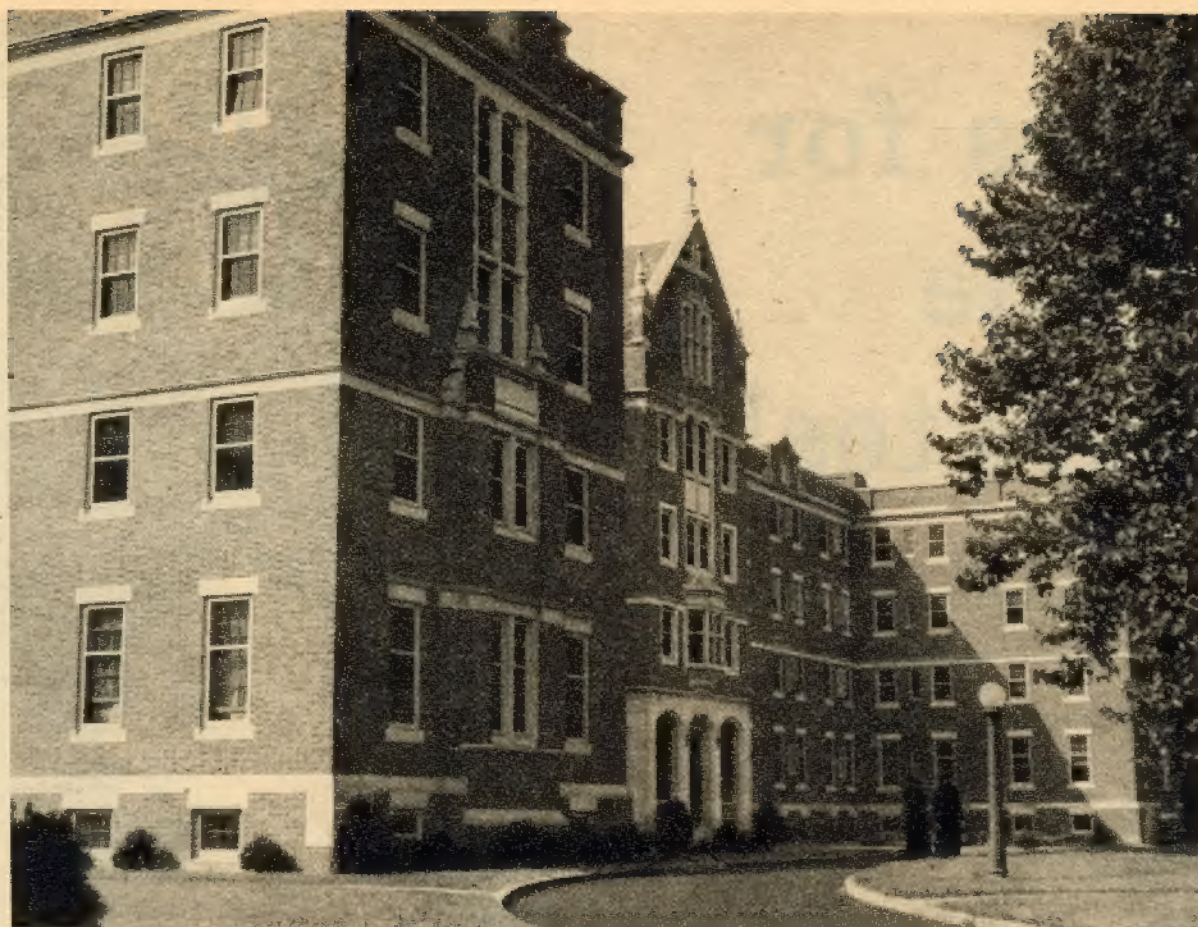
STILL, frequently he must also get graduate training if he is to succeed in any of a wide variety of professions. So he gets a daytime job and he starts his graduate classes along about the time of day when the graduate students at Princeton are finishing their tea. This after-work graduate study is a 20th century phenomenon; such

a vast broadening of the graduate base is most essential in New Jersey. Evening classes lend vigor to graduate programs at Rutgers, Seton Hall, Fairleigh Dickinson, Newark College of Engineering, Stevens and five of the state's six teachers colleges.

THIS is a difficult phase of graduate study to pin down accurately. Statistics at the State Department of Education after all these years continue to count only full-time students—that is, students who are immersed in graduate study to the exclusion of all else. There can be room for wondering when state accounting will catch up to the thousands of people getting graduate degrees in evening classes.

Look at some of the discrepancies: Official state figures for 1955 (the latest available) show 312 graduate students at Rutgers; Rutgers statistics show 379 full-time, 1,532 part-time degree seekers. Seton Hall gets credit for 127 graduate students; the Hall's own figures show more than 700 graduate students (most of them part-time). Teachers colleges—on state figures—have 26 graduate people; actually there are hundreds of part-time degree seekers. Neither Newark College of Engineering or Stevens are listed—despite nearly 1,600 degree-seeking students enrolled in their two evening graduate engineering programs.

Despite this statistical lag (which probably is as much cultural as anything), part-time courses quite likely are the most positive answer to the question of how the tremendous demands for graduate study can be met. Not only do evening classes permit



Main hall of Immaculate Conception Seminary at Darlington, diocesan seminary of Newark Archdiocese. Campus is in Ramapo Valley.

students to earn their way—they also permit doubled use of college facilities. With the exception of some few areas in the sciences, undergraduate facilities can be used very nicely for graduate classes. Newark College of Engineering and Stevens, by way of illustration, find doubled use of engineering classrooms and laboratories quite feasible.

SOME way to speed up graduate work must be found in the decade ahead. Take the matter of upgrading teachers, as one instance. The Rutgers School of Education proves the overwhelming demand for part-time study: of the 584 students seeking advanced education degrees at the state university, only five are full time (that's right, five). This situation is equally true in Seton Hall's School of Education and in the graduate study programs of the State Teachers colleges.

As another example of meeting a serious need, examine the evening programs at Newark College of Engineering and Stevens. Newark gained approval to grant an M.S. degree in 1946 and now the Newark school has nearly 750 students in its part-time degree program. Stevens began its graduate program in 1930, now has more than 900 enrolled in its evening advanced degree curriculum.

Graduate engineering study probably is more necessary than in most areas. There is general agreement among industrial personnel men that convenient facilities for advanced study are just as important to serious young engineers as such matters as salary and security. Industries remote from graduate schools find engineers hard to come by. It seems abundantly clear, therefore, that industry-attuned New Jersey must appreciate the night-time graduate opportunities at NCE and Stevens.

THE same can be said for part-time courses leading to graduate degrees in various facets of business administration. New Jersey's commercial interests—its industries, its banks, its

insurance houses, its mercantile establishments—should have made advanced business education within the state a necessity long ago. Yet graduate business programs in New Jersey are a thing of the last six years (and not because graduate business study was unnecessary; witness the long-standing success of Harvard School of Business).

It is even astounding, on reflection, to note that Rutgers had no graduate school of business until 1950—and that since that time graduate business courses have both started at Seton Hall and Fairleigh Dickinson. The success of all these programs is tangible evidence of the welcome the courses received.

Exhibit "A" could well be the Rutgers Graduate School of Business Administration in Newark. Founded in 1950, by its fifth year of operation the school had an enrollment of 450 in the two-year course. In 1955 Rutgers stood ninth in the country in awarding master's degrees in business. Seton Hall's recently established graduate business program on the South Orange campus has 160 enrollees, and Fairleigh Dickinson, in its second year of graduate business study, has 125 students.

IN the long run industry and business tend to benefit greatly from graduate study within the state; it is they who will be using the talents and education of many advanced degree holders as a resource as vital as the raw materials they pour into their production. Graduate study on a campus encourages research, too—much of which eventually is translated into dollars and cents for the industrial budget.

Most important, colleges and universities—and educational programs in general—must find some way to encourage graduate students to gravitate toward teaching. The tremendous need for teachers in elementary and secondary schools is a matter of national concern. Since so many boards of education tie salary incre-

ments to graduate study, there is no questioning the need to expand graduate study for that area alone.

Most vital of all, colleges and universities face an incredibly serious situation as far as faculty recruiting is concerned. One estimate of college teacher needs show that between 350,000 and 550,000 additional men and women must be found for national college faculties by 1970. New Jersey will need countless thousands of new professors—most of whom must be prepared in graduate schools if current faculty prerequisites persist. Indeed, it is logical to speculate that the possibility of coping with the oncoming great flood of college students will depend more on the ability of colleges to get qualified teachers than their ability to get new buildings.

OCCASIONALLY academic semantics get much in the way of evaluating graduate programs. There is a tendency to judge graduate study in liberal arts or science terms. In the strict academic world such programs as seminary study and most law training usually are excluded as graduate study—even though it takes about three times as much advanced study to get a divinity degree or a basic law degree as it does to get a master of science or master of arts degree.

Thus, despite excellent law schools at Rutgers and Seton Hall (both located in Newark), there is no inclusion of law in most official graduate study statistics. Actually, by adding law degrees and seminary degrees and degrees earned on a part-time basis, there is even reason to recognize that New Jersey may be taking on an increasing burden of graduate study that does not yet appear in an out-moded system of accounting.

Most encouraging of all in the graduate picture is the fact that since 1950 there has been an awakening to the necessity of broadening the graduate study base. Rutgers and Seton Hall have expanded their programs to meet state and area demands and ever-alert Fairleigh Dickinson is moving into the graduate area with its customary speed and cheerful willingness to undertake something even if some educational classicists insist it has never been tackled before and therefore can't be done.

THE new Rutgers law center in Newark has at last reached the building stage. New Jersey finally is to get its first medical college and its first two dental schools. Business courses are expanding. Teachers colleges are widening the scope of their graduate study programs. The nighttime graduate engineering curricula in NCE and Stevens are unqualified successes.

So, there is movement and there is progress. Nevertheless, graduate school deficiencies remain clearly visible. Graduate schools can't be rushed; the entire future of American education can rest on emphasizing quality in graduate study. The pressing, crushing demand won't be here in full force for another decade or so—but in graduate study New Jersey can't wait until 1965 to get ready for 1966. New Jersey has waited too long already.



Much of the time graduate study is a matter of deep concentration within carrels of university libraries.